CORRECTIVE ACTION DEVELOPMENT, TRACKING, AND VERIFICATION

This procedure provides guidance for the development, tracking and verification of corrective actions for safety, safeguards and security, cyber security, emergency management and infrastructure issues.

1.0 APPROVAL RECORD

- Reviewed by: Document Control Coordinator (Hiliary Burns)
- Reviewed by: Safeguards and Security (Jeff Bartine)
- Approved by: Environment, Safety, Health, and Assurance Manager (Sean Whalen)
- Approved by: Deputy Director (Tom Lograsso)

The official approval record for this document is maintained in the Training and Documents office, 105 TASF.

2.0 REVISION/REVIEW INFORMATION

In accordance with the Document Control Program Plan, this procedure will be reviewed at a minimum of every three years. The revision description for this document is available from and maintained by the author.

3.0 PURPOSE AND SCOPE

This document describes the process utilized by Ames Laboratory to direct the development, tracking, and verification of effectiveness for corrective actions related to safety, safeguards and security, cyber security, emergency management and infrastructure issues. In the past, the development, tracking, and verification processes for corrective actions have exhibited the following weaknesses:

- Actions do not address the primary causal factors of the identified deficiency
- Actions are not institutionalized into existing operating practices
- Actions are not tracked to completion
- Verification of completion of actions are not directed by guidance
- Verification of effectiveness of corrective actions are not directed by guidance

To ensure deficient issues are adequately corrected, it is best to design and implement corrective actions that address the causal factors associated with the identified deficiencies and to fully verify the completion and effectiveness of such actions. This document provides guidance to help determine the level of detail, rigor, and independence of review for corrective actions.

3.1 Definitions

ALCATS: Ames Laboratory Corrective Action Tracking System

CAIRS: Computerized Accident/Injury Reporting System (DOE database)

IOSC: Incident of Security Concerns

Line Management: Any management level, within the laboratory organization, including program directors, department managers, group leaders and supervisors that are responsible and accountable for directing and conducting work.

NTS (PAAA): Non Compliance Tracking System (formerly the Price Anderson Amendment Act)

ORPS: Occurrence Reporting and Processing System

TapRooT® Causal Process: A system of root cause analysis, problem investigation, and proactive improvement marketed by System Improvement

WSH: Worker Safety and Health

4.0 PERFORMANCE

Issues and concerns are generally identified during assessment processes or event/incident investigations. Typically the Laboratory's assessment processes (such as Topical Appraisals, internal audits, or other internal reviews) identify items as defined below or through supplemental assessment documentation.

Finding: A determination of deficiency pertaining to implementation of a requirement based on a recognized inadequacy or weakness. Findings are categorized as Level 1, Level 2 High Significance, Level 2 Moderate Significance, or Level 3. This categorization is necessary to identify the degree of management formality and rigor required for the correction, tracking to closure, and trending of findings.

Level 1 Finding: A deficiency of major significance that warrants a high level of attention on the part of line management. Typically these reflect a gap in addressing requirements or a systemic problem with implementing requirements. If left uncorrected, this level of finding could negatively impact the Laboratory's mission. Examples of a Level 1 Findings include deliberate violations, sabotage, and ignoring Radiation Work Permits.

Level 2 High Significance Finding: A finding that could cause a severe injury, a serious violation of a safety, health, or environmental requirement or a programmatic impact. Examples of Level 2 High Significance Findings include exposure to live electrical parts, using poisonous gas outside of a fume hood or designated cabinet, not using laser glasses when beam is exposed, and improper disposal of hazardous waste. Multiple deficiencies at this level, when of a similar nature, may be rolled-up together into a Level 1 Finding.

Level 2 Moderate Significance Finding: A finding that could cause moderate injury, a violation of safety, health, or environmental requirement or a programmatic impact. Examples of Level 2 Moderate Significance Findings include improper use of extension cords, failure to label chemicals, late disposal of hazardous waste, and failure to maintain log entries for X-ray machines. Multiple deficiencies at this level, when of a similar nature, may be rolled-up together into a Level 2 High Significance Finding.

Level 3 Finding: An inadequacy where it is recognized that improvements can be gained in safety, process, performance, or efficiency already established for meeting a requirement. This level of finding should also include minor deviations observed during oversight activities that can be promptly corrected and verified as completed. Examples of Level 3 Findings include idle/obsolete equipment being stored in laboratory spaces, failure to update chemical

inventories, emergency information on door cards not up-to-date, and failure to stock safety glasses in visitor bins.

Strength: A mature process or activity that has consistently demonstrated the ability to meet expectations, or a process or activity that efficiently and effectively facilitates and integrates processes, activities, and resources.

Noteworthy Practice: A positive observation, based on objective assessment data, or a particular practice, procedure, process, or system considered so unique or innovative that other organizations within the Laboratory might find it beneficial. Mere compliance with mandatory requirements is not considered to be a noteworthy practice.

All assessment results (internal and external), and event/incident investigation issues are screened and categorized for reportability according to the Laboratory's Event Reporting Program.

The following table summarizes guidance for determining the minimum level of rigor for the performance of causal analysis, development of corrective actions, tracking of corrective actions, and verification of completion and effectiveness of corrective actions, according to the results of screening and categorization of the issue**.**

Table 4.1 Guidance for Corrective Actions based on Event Categorizations

Assessment Results or Event Type	**Screened, but below AMES LOCAL threshold** (as defined by Plan 10200.002 *Event Reporting Program*)	**Categorized as:** • **AMES LOCAL – ORPS** • **AMES LOCAL – NTS** • **AMES LOCAL – WSH** • **AMES LOCAL – IOSC**	**Categorized as:** • **ORPS** • **NTS (PAAA)** • **WS&H - NTS** • **Incidents of Security Concern**	**Categorized as:** • **Type A Accident** • **Type B Accident**
Causal Analysis	No causal analysis	Basic cause category determination by ESH&A	TapRooT® causal process by ESH&A	Performed by Type A or Type B Accident Investigation Team
Development of Corrective Action	Line management	Line management with consensus of ESH&A	Line management with consensus of ESH&A	ESH&A in consultation with Ames Site Office
Tracking of Corrective Action	As directed by specific audit program or ESH&A (See Note # 1)	ALCATS	ALCATS Also tracked in ORPS or NTS	ALCATS Also tracked in ORPS or NTS
Verification of the Completion of Corrective Action	Line management No documentation requirement	Line management and ESH&A Documentation required	Line management and ESH&A Documentation required	Line management, ESH&A, and Ames Site Office Documentation required
Verification of Effectiveness of Corrective Action	None (See Note # 2)	ESH&A Documentation required	ESH&A Documentation required	ESH&A and Ames Site Office Documentation required

Note # 1 - Many of the issues screened, but not categorized, are also tracked in databases depending on the type of issue. For example, Findings from Independent Walk-throughs are tracked in ALCATS and Discrepancies identified by Plant Protection Section are tracked in a discrepancy database on the Ames Laboratory administrative computer.

Note # 2 - Many of the issues in this category have corrective action(s), which when noted as complete are thereby also verified as effective. For example, a Finding from an Independent Walk-through could be incomplete labeling of a chemical sample in a container. Once the labeling is complete, it is unnecessary to judge effectiveness.

4.1 Guidance for Causal Analysis

When determining the level of effort associated with the causal analysis of an event, the significance, severity, or risk associated with the event must be considered. The following guidance levels of effort are defined for performance of causal analyses:

- As noted in the table in section 4.0, no causal analysis is required for issues which are screened but not categorized as events.
- Events categorized as AMES LOCAL are subject to the AMES LOCAL Event Investigation and Analysis Process as described in the Event Reporting Program Plan.
- Events categorized as ORPS, PAAA-NTS, and Incidents of Security Concern are subject to the AMES LOCAL Event Investigation and Analysis Process as described in the Event Reporting Program Plan.
- Type A or Type B Accidents will undergo causal analysis as determined by the Accident Investigation Team.

4.2 Guidance for Development of Corrective Actions

The following guidance is provided to direct, as applicable, the minimum rigor for the development of corrective actions:

- Develop an understanding of the basis, scope and cause of the deficiency, including the extent of conditions/causal factors that led to the deficiency.
- Provide a description of the proposed action(s) that will effectively resolve the issue(s).
- Examine existing documentation of programs and practices related to the deficiency.
- Designate a responsible individual and associated line management as point of contact for the corrective action.
- Review resource needs for proposed actions with appropriate line management.
- Develop or modify documentation for programs and practices related to the deficiency.
- Establish a planned completion date for the corrective action, which allows adequate time to address the corrective action and ensures a timely response to the deficiency.
- Include the causal factors of the deficiency in periodic trend analysis (Trend Analysis of ES&H Concerns).
- Provide a general description of the mechanism used to verify the status of the corrective action, including any specific deliverables, which signify partial or total completion.
- If appropriate, provide a general description of the mechanism used to verify the effectiveness of the corrective action.

4.3 Guidance for Tracking Corrective Actions

The following guidance is provided to direct, as applicable, the tracking of corrective actions

- Computer based systems are effective for managing information related to deficiencies and corrective actions. A database, Corrective Action 6, is utilized by ESH&A to support the Ames Laboratory Corrective Action Tracking System (ALCATS) as the primary tracking system for corrective actions. ALCATS should

be utilized whenever possible, but the ESH&A Manager or the Chief Operations Officer can approve other mechanisms.

- The Industrial Safety Specialist(s) enters corrective actions into ALCATS.
- The Enforcement Coordinator(s) enter corrective actions into DOE systems (i.e., CAIRS, NTS, ORPS).
- A copy of the corrective action information, as entered into ALCATS, will be provided to the point of contact for the corrective action.
- Corrective action status shall be updated periodically.
    - The status of corrective actions related to events not categorized shall be updated according to the requirements of the specific program that identified the deficiency.
    - The status of corrective actions related to events categorized as Ames-Locals, ORPS, NTS (formerly PAAA), Incidents of Security Concerns (IOSC), and Type A or Type B Accidents shall be updated monthly.

4.4 Guidance for Verification of Corrective Action Completion

The following guidance is provided to direct, as applicable, the verification of completion of corrective actions:

- The appropriate line management element is responsible for initial verification of completion of corrective actions.
- Corrective actions related to AMES LOCAL events; ORPS, PAAA-NTS, WSH-NTS, IOSCs, and Type A or Type B Accident events are also verified by ESH&A.
- Ames Site Office also verifies corrective actions related to Type A and Type B Accident events.
- Completion of corrective actions is verified according to the following guidance:
    - Verification that all document updates referenced in the corrective action has been completed.
    - Verification that all training related to the corrective action has been performed.
    - Verification that all other deliverables has been completed.
    - Verification that the basic causal factors have been submitted for trend analysis.

4.5 Guidance for Verification of Corrective Action Effectiveness

Effectiveness reviews are conducted by line management or ESH&A for corrective actions related to events categorized as Ames Locals or ORPS, PAAA-NTS, or IOSCs. The following guidance is provided to direct, as applicable, the verification of corrective actions:

- Understand the possible causes for an ineffective corrective action.
    - Causal factors were incorrectly identified.
    - Causal factors correctively identified but corrective action is inappropriate.
    - Corrective action is not fully implemented or not implemented as intended.
    - Corrective action was not implemented in a timely manner.
    - Corrective action created new or different problem(s).
    - Organization/personnel lack understanding or have not accepted ownership of issue.

- Review and observe corrective action elements, especially deliverables, to ensure adequacy.
- Determine if corrective action information has been appropriately disseminated.
- Conduct interviews with activity participants and affected personnel about their perceptions of the changes due to the corrective actions.
- If applicable, observe work related to the corrective action.
- Identify, review, and analyze trends in performance data related to the corrective action.

The following guidance is provided to direct the conclusion of an effectiveness review of corrective actions. The following conclusion should be documented in ALCATS:

- **Effective:** Corrective action can be closed and the issue(s) is primarily resolved. No new corrective action is recommended.
- **Partially Effective:** Corrective action can be closed and the issue(s) are partially resolved, but additional corrective action is recommended.
- **Ineffective:** Corrective action should not be closed and the issue(s) are not effectively resolved. Additional corrective actions are required.

5.0 POST PERFORMANCE ACTIVITY

Following the completion of the corrective action, ESH&A is responsible for the following actions:

- File and maintain all documentation related to the identification, closeout and verification of the corrective action.
- Provide closeout notification to appropriate program/department and/or DOE.